

ABSTRACT OF THE DISCLOSURE

A method for programming a semiconductor element in a semiconductor structure such as an IC involves reducing the backside thickness of the substrate and directing an energy beam through the backside at an opaque component of the semiconductor element. A support structure mounted on the semiconductor structure provides support during and after the thinning operation. Alternatively, the substrate can be thinned only under the semiconductor element, leaving the rest of the substrate thick enough to maintain structural integrity. The energy beam heats the opaque component. The prior thinning operation minimizes heat dissipation away from the semiconductor element, so that dopant diffusion occurs, changing the electrical characteristics of the semiconductor element. By modifying selected elements in this manner, a semiconductor structure can be permanently programmed, even if it does not include non-volatile memory. Additionally, security is enhanced since the programming leaves no visible signs.